ServeRAID M1115 SAS/SATA Controller for IBM System x

IBM Redbooks Product Guide

The ServeRAID M1115 SAS/SATA Controller for IBM® System x® is a part of the IBM ServeRAID M Series family that offers a complete server storage solution consisting of RAID controllers, cache/flash modules, energy packs, and software feature upgrades in an ultra-flexible offerings structure. The M1115 offers a low-cost RAID 0/1/10 solution that can be upgraded to a cacheless RAID 5 with a Features-on-Demand license upgrade.

Figure 1 shows the ServeRAID M1115 Controller.

Figure 1. ServeRAID M1115 SAS/SATA Controller

Did you know

The ServeRAID M1115 SAS/SATA Controller is an entry-level internal data storage solution that provides hardware RAID capabilities and advanced features, such as online capacity expansion and RAID-level migration. The optional RAID 5 upgrade and support for self-encrypting drives no longer require a hardware key, because the upgrade functionality is implemented through Features-on-Demand (FoD) software licenses. With increased demand for performance and advanced features, the M1115 provides a seamless migration path to the full-featured RAID controllers, such as the ServeRAID M5110. The information about existing arrays can be recognized and imported into the new controller without requiring any reconfiguration.

Part number information

Table 1 provides the ordering part numbers and feature codes.

Table 1. Ordering part numbers and feature codes

Description	Part number	Feature code
ServeRAID M1115 SAS/SATA Controller for IBM System x	81Y4448	A1MZ
ServeRAID M1100 Series Zero Cache/RAID 5 Upgrade for IBM System x	81Y4542	A1X1

The ServeRAID M1115 option part number includes the following items:

- One ServeRAID M1115 adapter card
- Full-height (3U) bracket
- Low-profile (2U) bracket
- Warranty Flyer
- ServeRAID M Documentation CD
- Important Notices Flyer

The ServeRAID M1100 Series Zero Cache/RAID 5 Upgrade option part number includes the following items:

- M1100 Series upgrade authorization key
- Feature Activation Instructions

Features

The ServeRAID M1115 SAS/SATA Controller has the following standard features:

- Auto-resume on array rebuild or array reconstruction after loss of system power

  Auto-resume uses non-volatile RAM (NVRAM) to save rebuild progress during a host reboot or power failure to automatically resume from the last checkpoint. Auto-resume ensures that data integrity is maintained through the process. The card supports a number of features that are able to be implemented without rebooting the server. Applications, such as email and web server, benefit from avoiding downtime during transition.

- Online Capacity Expansion

  Online Capacity Expansion (OCE) allows the capacity of a virtual disk to be expanded by adding new physical disks or making use of unused space on existing disks, without requiring a reboot.

- Online RAID Level Migration

  Online RAID Level Migration (also known as logical drive migration) provides the ability to migrate a virtual disk from any RAID level to any other RAID level without requiring a reboot. System availability and application functionality remain unaffected.

- Fast initialization for quick array setup

  Fast initialization quickly writes zeroes to the first and last sectors of the virtual drive. This feature allows you to immediately start writing data to the virtual drive while the initialization is running in the background.

- Consistency check for background data integrity

  Consistency check verifies that all stripes in a virtual disk with a redundant RAID level are consistent. The consistency check will mirror data when an inconsistent stripe is detected for a RAID 1 and will recreate the parity from the peer disks in the case of a RAID 5. Consistency checks can be scheduled to take place periodically.

- Extensive online configuration options and advanced monitoring and event notification

  Management tools provide convenience for the configuration of logical volumes and alerting when errors have occurred or are about to occur.

- Patrol read for media scanning and repairing

  Patrol read is a background sentry service designed to proactively discover and correct media defects (bad sectors) that arise normally as a disk drive ages. The service issues a series of verify commands, and if a bad block is discovered, the card's firmware uses RAID algorithms to recreate the missing data and remap the sector to a good sector. The task is interruptible based on controller activity and host operations. The firmware also provides an interface where the patrol read task can be initiated, set up for continuous operation, and terminated from a management application. Patrol read can be activated by manual command or automatically.

- Global and dedicated Hot Spare with Revertible Hot Spare support

  A hot spare rebuilds data from all virtual disks within the disk group in which it is configured. ServeRAID provides the ability to define a physical disk as a hot spare to replace a failed drive. Hot spares can be configured as either global or dedicated. A global hot spare allows any physical drive to be designated as a hot spare. A dedicated hot spare allows the user to assign a hot spare drive to a particular array of the same drive type.

- Single controller multipathing (failover) I/O load balancing

  The ServeRAID's firmware detects and uses multiple paths from the controllers to the SAS drives that are in enclosures. With redundant paths to the same port of a device, if one path fails, another path can be used to communicate between the controller and the drive. Using multiple paths with load balancing, instead of a single path, can increase reliability through redundancy.

- WebBIOS and Human Interface Infrastructure (HII) configuration utilities for pre-boot array configuration and management

  WebBIOS and HII are utilities that allow you to configure drive groups and logical drives before installing or booting the operating system.

- MegaRAID Storage Manager management software

  MegaRAID Storage Manager is an easy-to-use advanced RAID management application that is used across the entire family of ServeRAID M controllers. It allows you to configure, monitor, and maintain drive groups, virtual drives, and advanced features with an intuitive GUI, reducing administrative efforts and simplifying troubleshooting.

The following features are optional and require the purchase of an additional upgrade:

- RAID 5, 50 support with Zero Cache/RAID 5 Upgrade (81Y4542)
- MegaRAID SafeStore support for self-encrypting drive (SED) services

  MegaRAID SafeStore encryption services offer instant secure erase and local key management for self-encrypting drives. Instant secure erase permanently removes data when repurposing or decommissioning SEDs. SafeStore local key management provides the necessary management and protection of SEDs using a simple pass phrase, security key identifier, and security key file that can be set and applied to all SEDs assigned to a ServeRAID adapter. This feature removes the complexity of managing each SED's unique encryption key, and essentially, it relieves the administrator of most of the daily tasks of securing data. The SafeStore feature is a part of a RAID 5 upgrade (81Y4542).

Technical specifications

The ServeRAID M1115 SAS/SATA Controller has the following specifications:

- PCI Low Profile, Half-length - MD2 form factor
- Eight internal 6 Gbps SAS/SATA ports
- Two internal Mini-SAS connectors (SFF-8087)
- Up to 6 Gbps throughput per port
- 533 MHz IBM PowerPC® processor with LSI SAS2008 6 Gbps RAID on Chip (ROC) controller
- PCI Express 2.0 x8 host interface
- Support for RAID levels 0, 1, and 10 standard; support for RAID 5, 50 with optional upgrade
- Zero Controller Cache, no battery/flash backup
- Support for SAS and SATA hard disk drives (HDDs) and solid-state drives (SSDs)
- Support for simple swap and hot swap drives
- Support for intermixing SAS and SATA HDDs and SSDs. Mixing different types of drives in the same array (drive group) not recommended
- Connection to up to 32 internal drives, depending on the server model (Up to 16 physical drives, including hot spares, can be used in RAID configurations. The drives beyond the limit of 16 are used as stand-alone HDDs in a non-RAID environment.)
- Optional support for self-encrypting drives (SEDs) with MegaRAID SafeStore
- Support for up to 16 virtual drives, up to 16 drive groups, up to 16 virtual drives per one drive group, and up to 16 physical drives per one drive group
- Support for virtual drive sizes up to 64 TB
- Configurable stripe size up to 64 KB
- Compliant with Disk Data Format (DDF) configuration on disk (COD)
- S.M.A.R.T. support
- MegaRAID Storage Manager management software

Feature upgrade matrix

The ServeRAID M1115 SAS/SATA Controller provides support for RAID 0, 1, and 10 as standard, ready to use or "out-of-the-box" capabilities. An optional feature upgrade is available to expand standard capabilities with RAID 5, 50 and self-encrypting drives. This Feature-on-Demand (FoD) upgrade is a software license. The following table lists the available upgrade and its capabilities.

Table 2. ServeRAID M1115 optional upgrade and its features

		Feature	RAID 5, 50	SED
Option description	**Part Number**	**Type**		
ServeRAID M1100 Series Zero Cache/RAID 5 Upgrade	81Y4542	FoD	Yes	Yes

Supported servers

The ServeRAID M1115 adapter card is supported on the IBM System x servers that are listed in the following table.

12 Gb SAS/SATA support: M1115 controller does not support 12 Gb SAS/SATA internal storage expansion options that can be installed in x3500 M4, x3550 M4, and x3650 M4 servers.

Table 3. System x and iDataPlex compatibility (Part 1)

Part number	**Description**	**x3100 M4 (2582)**	**x3250 M4 (2583)**	**x3300 M4 (7382)**	**x3500 M4 (7383, E5-2600)**	**x3530 M4 (7160)**	**x3550 M4 (7914, E5-2600)**	**x3630 M4 (7158)**	**x3650 M4 (7915, E5-2600)**	**x3690 X5 (7147)**	**x3750 M4 (8722)**	**x3850 X5 (7143)**	**dx360 M4 (7912, E5-2600)**
81Y4448	ServeRAID M1115 SAS/SATA Controller	N	N	Y	Y	Y	Y	Y	N	N	Y	N	Y
81Y4542	ServeRAID M1100 Series Zero Cache/RAID 5 Upgrade	N	N	Y	Y	Y	Y	Y	N	N	Y	N	Y

Table 3. System x and iDataPlex compatibility (Part 2)

Part number	Description	x3500 M4 (7383, E5-2600 v2)	x3550 M4 (7914, E5-2600 v2)	x3650 M4 (7915, E5-2600 v2)	x3650 M4 HD (5460)	dx360 M4 (7912, E5-2600 v2)	nx360 M4 (5455)
81Y4448	ServeRAID M1115 SAS/SATA Controller	Y	Y	N	N	Y	Y
81Y4542	ServeRAID M1100 Series Zero Cache/RAID 5 Upgrade	Y	Y	N	N	Y	Y

For more information about the System x servers that support each adapter, see the IBM ServerProven® website:
http://ibm.com/servers/eserver/serverproven/compat/us/

Supported drives

The ServeRAID M1115 SAS/SATA Controller supports the drives that are supported in the servers listed in Table 3. The maximum number of drives that can be connected to the RAID controller is limited by the maximum number of internal drive bays for a supported server.

Supported 2.5" simple-swap hard disk drives and the servers with which they are supported are listed in the following table.

Table 4. Supported 2.5" simple-swap hard disk drives (Part 1)

Part number	Product description	x3300 M4 (7382)	x3500 M4 (7383, E5-2600)	x3500 M4 (7383, E5-2600 v2)	x3530 M4 (7160)	x3550 M4 (7914, E5-2600)	x3550 M4 (7914, E5-2600 v2)	x3630 M4 (7158)	x3750 M4 (8722)	dx360 M4 (7912, E5-2600)	dx360 M4 (7912, E5-2600 v2)	nx360 M4 (5455)
SAS												
90Y8935	IBM 146GB 15K 6Gbps SAS 2.5" SFF G2SS HDD	N	N	N	Y	N	N	N	N	N	N	N
49Y1996	IBM 146GB 15K 6Gbps SAS 2.5" SFF SS HDD	N	N	N	N	N	N	N	N	Y	Y	N
90Y8895	IBM 300GB 10K 6Gbps SAS 2.5" SFF G2SS HDD	N	N	N	Y	N	N	N	N	N	N	N
49Y1991	IBM 300GB 10K 6Gbps SAS 2.5" SFF SS HDD	N	N	N	N	N	N	N	N	Y	Y	N
81Y9674	IBM 300GB 15K 6Gbps SAS 2.5" SFF SS HDD	N	N	N	Y	N	N	N	N	Y	Y	N
90Y8890	IBM 600GB 10K 6Gbps SAS 2.5" SFF G2SS HDD	N	N	N	Y	N	N	N	N	N	N	N
00AD107	IBM 600GB 10K 6Gbps SAS 2.5" G2SS Hybrid	N	N	N	Y	N	N	N	N	Y	Y	N
49Y2027	IBM 600GB 10K 6Gbps SAS 2.5" SFF SS HDD	N	N	N	N	N	N	N	N	Y	Y	N
49Y2022	IBM 600GB 10K 6Gbps SAS 2.5" SFF NHS HDD	N	N	N	N	N	N	N	N	N	N	N
81Y9654	IBM 900GB 10K 6Gbps SAS 2.5" SFF SS HDD	N	N	N	Y	N	N	N	N	Y	Y	N
00AD080	IBM 1.2TB 10K 6Gbps SAS 2.5" SS HDD	N	N	N	Y	N	N	N	N	Y	N	N
00AD045	IBM 146GB 15K 6Gbps SAS 2.5" NHS HDD for NeXtScale System	N	N	N	N	N	N	N	N	N	N	Y
00AD050	IBM 300GB 15K 6Gbps SAS 2.5" NHS HDD for NeXtScale System	N	N	N	N	N	N	N	N	N	N	Y
00AD055	IBM 300GB 10K 6Gbps SAS 2.5" NHS HDD for NeXtScale System	N	N	N	N	N	N	N	N	N	N	Y
00AD060	IBM 600GB 10K 6Gbps SAS 2.5" NHS HDD for NeXtScale System	N	N	N	N	N	N	N	N	N	N	Y
00AD065	IBM 900GB 10K 6Gbps SAS 2.5" NHS HDD for NeXtScale System	N	N	N	N	N	N	N	N	N	N	Y

Table 4. Supported 2.5" simple-swap hard disk drives (Part 2)

Part number	Product description	x3300 M4 (7382)	x3500 M4 (7383, E5-2600)	x3500 M4 (7383, E5-2600 v2)	x3530 M4 (7160)	x3550 M4 (7914, E5-2600)	x3550 M4 (7914, E5-2600 v2)	x3630 M4 (7158)	x3750 M4 (8722)	dx360 M4 (7912, E5-2600)	dx360 M4 (7912, E5-2600 v2)	nx360 M4 (5455)
NL SATA												
81Y9734	IBM 250GB 7.2K 6Gbps NL SATA 2.5" SFF SS HDD	N	N	N	Y	N	N	N	N	Y	Y	N
81Y9738	IBM 500GB 7.2K 6Gbps NL SATA 2.5" SFF SS HDD	N	N	N	Y	N	N	N	N	Y	Y	N
81Y9742	IBM 1TB 7.2K 6Gbps NL SATA 2.5" SFF SS HDD	N	N	N	Y	N	N	N	N	Y	Y	N
00AD030	IBM 250GB 7.2K 6Gbps SATA 2.5" NHS HDD for NeXtScale System	N	N	N	N	N	N	N	N	N	N	Y
00AD035	IBM 500GB 7.2K 6Gbps SATA 2.5" NHS HDD for NeXtScale System	N	N	N	N	N	N	N	N	N	N	Y
00AD040	IBM 1TB 7.2K 6Gbps SATA 2.5" NHS HDD for NeXtScale System	N	N	N	N	N	N	N	N	N	N	Y

Supported 2.5" hot-swap hard disk drives and the servers with which they are supported are listed in the following table.

Table 5. Supported 2.5" hot-swap hard disk drives

Part number	Product description	x3300 M4 (7382)	x3500 M4 (7383, E5-2600)	x3500 M4 (7383, E5-2600 v2)	x3530 M4 (7160)	x3550 M4 (7914, E5-2600)	x3550 M4 (7914, E5-2600 v2)	x3630 M4 (7158)	x3750 M4 (8722)	dx360 M4 (7912, E5-2600)	dx360 M4 (7912, E5-2600 v2)	nx360 M4 (5455)
SAS												
90Y8926	IBM 146GB 15K 6Gbps SAS 2.5" SFF G2HS HDD	Y	Y	Y	Y	Y	Y	N	Y	N	N	N
90Y8944	IBM 146GB 15K 6Gbps SAS 2.5" SFF G2HS SED	Y	Y	Y	Y	Y	Y	N	Y	N	N	N
42D0677	IBM 146GB 15K 6Gbps SAS 2.5" SFF Slim-HS HDD	N	N	N	N	N	N	N	N	N	N	N
90Y8877	IBM 300GB 10K 6Gbps SAS 2.5" SFF G2HS HDD	Y	Y	Y	Y	Y	Y	N	Y	N	N	N
90Y8913	IBM 300GB 10K 6Gbps SAS 2.5" SFF G2HS SED	Y	Y	Y	Y	Y	Y	N	Y	N	N	N
42D0637	IBM 300GB 10K 6Gbps SAS 2.5" SFF Slim-HS HDD	N	N	N	N	N	N	N	N	N	N	N
81Y9670	IBM 300GB 15K 6Gbps SAS 2.5" SFF HS HDD	Y	Y	Y	Y	Y	Y	N	Y	N	N	N
00AD102	IBM 600GB 10K 6Gbps SAS 2.5" G2HS Hybrid	Y	Y	Y	Y	Y	Y	N	N	N	N	N
90Y8872	IBM 600GB 10K 6Gbps SAS 2.5" SFF G2HS HDD	Y	Y	Y	Y	Y	Y	N	Y	N	N	N
90Y8908	IBM 600GB 10K 6Gbps SAS 2.5" SFF G2HS SED	N	Y	Y	Y	Y	Y	N	Y	N	N	N
49Y2003	IBM 600GB 10K 6Gbps SAS 2.5" SFF Slim-HS HDD	N	N	N	N	N	N	N	N	N	N	N
81Y9662	IBM 900GB 10K 6Gbps SAS 2.5" SFF G2HS SED	N	Y	Y	N	Y	Y	N	Y	N	N	N
81Y9650	IBM 900GB 10K 6Gbps SAS 2.5" SFF HS HDD	Y	Y	Y	Y	Y	Y	N	Y	N	N	N
00AD075	IBM 1.2TB 10K 6Gbps SAS 2.5" G2HS HDD	Y	Y	N	Y	Y	N	N	Y	N	N	N
00AD085	IBM 1.2TB 10K 6Gbps SAS 2.5" G2HS SED	Y	Y	N	Y	Y	N	N	Y	N	N	N
NL SAS												
90Y8953	IBM 500GB 7.2K 6Gbps NL SAS 2.5" SFF G2HS HDD	Y	Y	Y	Y	Y	Y	N	Y	N	N	N
42D0707	IBM 500GB 7200 6Gbps NL SAS 2.5" SFF Slim-HS HDD	N	N	N	N	N	N	N	N	N	N	N
81Y9690	IBM 1TB 7.2K 6Gbps NL SAS 2.5" SFF HS HDD	Y	Y	Y	Y	Y	Y	N	Y	N	N	N
NL SATA												
81Y9722	IBM 250GB 7.2K 6Gbps NL SATA 2.5" SFF HS HDD	Y	Y	Y	Y	Y	Y	N	Y	N	N	N
81Y9726	IBM 500GB 7.2K 6Gbps NL SATA 2.5" SFF HS HDD	Y	Y	Y	Y	Y	Y	N	Y	N	N	N
81Y9730	IBM 1TB 7.2K 6Gbps NL SATA 2.5" SFF HS HDD	Y	Y	Y	Y	Y	Y	N	Y	N	N	N

Supported 3.5" hot-swap hard disk drives and the servers with which they are supported are listed in the following table.

Table 6. Supported 3.5" hot-swap hard disk drives (Part 1)

Part number	Product description	x3300 M4 (7382)	x3500 M4 (7383, E5-2600)	x3500 M4 (7383, E5-2600 v2)	x3530 M4 (7160)	x3550 M4 (7914, E5-2600)	x3550 M4 (7914, E5-2600 v2)	x3630 M4 (7158)	x3750 M4 (8722)	dx360 M4 (7912, E5-2600)	dx360 M4 (7912, E5-2600 v2)	nx360 M4 (5455)
SAS												
49Y6092	IBM 300GB 15K 6Gbps SAS 3.5" G2HS HDD	Y	Y	Y	Y	Y	Y	Y	N	N	N	N
44W2234	IBM 300GB 15K 6Gbps SAS 3.5" Hot-Swap HDD	N	N	N	N	N	N	N	N	N	N	N
49Y6097	IBM 450GB 15K 6Gbps SAS 3.5" G2HS HDD	Y	Y	Y	Y	Y	Y	Y	N	N	N	N
44W2239	IBM 450GB 15K 6Gbps SAS 3.5" Hot-Swap HDD	N	N	N	N	N	N	N	N	N	N	N
49Y6102	IBM 600GB 15K 6Gbps SAS 3.5" G2HS HDD	Y	Y	Y	Y	Y	Y	Y	N	N	N	N
44W2244	IBM 600GB 15K 6Gbps SAS 3.5" Hot-Swap HDD	N	N	N	N	N	N	N	N	N	N	N
NL SAS												
90Y8567	IBM 1TB 7.2K 6Gbps NL SAS 3.5" G2HS HDD	Y	Y	Y	Y	Y	Y	Y	N	N	N	N
42D0777	IBM 1TB 7.2K 6Gbps NL SAS 3.5" HS HDD	N	N	N	N	N	N	N	N	N	N	N
90Y8572	IBM 2TB 7.2K 6Gbps NL SAS 3.5" G2HS HDD	Y	Y	Y	Y	Y	Y	Y	N	N	N	N
00W1533	IBM 2TB 7.2K 6Gbps NL SAS 3.5" G2HS SED	Y	Y	Y	Y	Y	Y	Y	N	N	N	N
42D0767	IBM 2TB 7.2K 6Gbps NL SAS 3.5" HS HDD	N	N	N	N	N	N	N	N	N	N	N
90Y8577	IBM 3TB 7.2K 6Gbps NL SAS 3.5" G2HS HDD	Y	Y	Y	Y	Y	Y	Y	N	N	N	N
81Y9758	IBM 3TB 7.2K 6Gbps NL SAS 3.5" HS HDD	N	N	N	N	N	N	N	N	N	N	N
49Y6210	IBM 4TB 7.2K 6Gbps NL SAS 3.5" G2HS HDD	Y	Y	Y	Y	Y	Y	Y	N	N	N	N
00W1543	IBM 4TB 7.2K 6Gbps NL SAS 3.5" G2HS SED	Y	Y	Y	Y	Y	Y	Y	N	N	N	N
49Y6205	IBM 4TB 7.2K 6Gbps NL SAS 3.5" HS HDD	N	N	N	N	N	N	N	N	N	N	N

Table 6. Supported 3.5" hot-swap hard disk drives (Part 2)

Part number	Product description	x3300 M4 (7382)	x3500 M4 (7383, E5-2600)	x3500 M4 (7383, E5-2600 v2)	x3530 M4 (7160)	x3550 M4 (7914, E5-2600)	x3550 M4 (7914, E5-2600 v2)	x3630 M4 (7158)	x3750 M4 (8722)	dx360 M4 (7912, E5-2600)	dx360 M4 (7912, E5-2600 v2)	nx360 M4 (5455)
NL SATA												
81Y9786	IBM 500GB 7.2K 6Gbps NL SATA 3.5" G2HS HDD	Y	Y	Y	Y	Y	Y	Y	N	N	N	N
39M4530	500GB 3.5" Hot-Swap SATA II	N	N	N	N	N	N	N	N	N	N	N
81Y9790	IBM 1TB 7.2K 6Gbps NL SATA 3.5" G2HS HDD	Y	Y	Y	Y	Y	Y	Y	N	N	N	N
43W7626	IBM Server 1TB 7200 SATA 3.5" HS HDD	N	N	N	N	N	N	N	N	N	N	N
81Y9794	IBM 2TB 7.2K 6Gbps NL SATA 3.5" G2HS HDD	Y	Y	Y	Y	Y	Y	Y	N	N	N	N
42D0782	IBM 2TB 7200 NL SATA 3.5" HS HDD	N	N	N	N	N	N	N	N	N	N	N
81Y9798	IBM 3TB 7.2K 6Gbps NL SATA 3.5" G2HS HDD	Y	Y	Y	Y	Y	Y	Y	N	N	N	N
81Y9774	IBM 3TB 7.2K 6Gbps NL SATA 3.5" HS HDD	N	N	N	N	N	N	N	N	N	N	N
49Y6002	IBM 4TB 7.2K 6Gbps NL SATA 3.5" G2HS HDD	Y	Y	Y	Y	Y	Y	Y	N	N	N	N
49Y6185	IBM 4TB 7.2K 6Gbps NL SATA 3.5" HS HDD	N	N	N	N	N	N	N	N	N	N	N

Supported 3.5" simple-swap hard disk drives and the servers with which they are supported are listed in the following table.

Table 7. Supported 3.5" simple-swap hard disk drives

Part number	Product description	x3300 M4 (7382)	x3500 M4 (7383, E5-2600)	x3500 M4 (7383, E5-2600 v2)	x3530 M4 (7160)	x3550 M4 (7914, E5-2600)	x3550 M4 (7914, E5-2600 v2)	x3630 M4 (7158)	x3750 M4 (8722)	dx360 M4 (7912, E5-2600)	dx360 M4 (7912, E5-2600 v2)	nx360 M4 (5455)
NL SATA												
81Y9802	IBM 500GB 7.2K 6Gbps NL SATA 3.5" G2SS HDD	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N
39M4514	500GB 3.5" Simple-Swap SATA II	N	N	N	N	N	N	N	N	N	N	N
81Y9806	IBM 1TB 7.2K 6Gbps NL SATA 3.5" G2SS HDD	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N
43W7622	IBM 1TB 7.2K SATA 3.5" Simple-Swap HDD	N	N	N	N	N	N	N	N	N	N	N
81Y9810	IBM 2TB 7.2K 6Gbps NL SATA 3.5" G2SS HDD	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N
42D0787	IBM 2TB 7200 NL SATA 3.5" SS HDD	N	N	N	N	N	N	N	N	N	N	N
81Y9814	IBM 3TB 7.2K 6Gbps NL SATA 3.5" G2SS HDD	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N
81Y9778	IBM 3TB 7.2K 6Gbps NL SATA 3.5" SS HDD	N	N	N	N	N	N	N	N	N	N	N
49Y6012	IBM 4TB 7.2K 6Gbps NL SATA 3.5" G2SS HDD	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N
49Y6190	IBM 4TB 7.2K 6Gbps NL SATA 3.5" SS HDD	N	N	N	N	N	N	N	N	N	N	N
00AD005	IBM 500GB 7.2K 6Gbps SATA 3.5" NHS HDD for NeXtScale System	N	N	N	N	N	N	N	N	N	N	Y
00AD010	IBM 1TB 7.2K 6Gbps SATA 3.5" NHS HDD for NeXtScale System	N	N	N	N	N	N	N	N	N	N	Y
00AD015	IBM 2TB 7.2K 6Gbps SATA 3.5" NHS HDD for NeXtScale System	N	N	N	N	N	N	N	N	N	N	Y
00AD020	IBM 3TB 7.2K 6Gbps SATA 3.5" NHS HDD for NeXtScale System	N	N	N	N	N	N	N	N	N	N	Y
00AD025	IBM 4TB 7.2K 6Gbps SATA 3.5" NHS HDD for NeXtScale System	N	N	N	N	N	N	N	N	N	N	Y

Supported 1.8-inch solid-state drives (SSDs) and the servers with which they are supported are listed in the following table.

Table 8. Supported 1.8"-inch solid-state drives

Part number	Product description	x3300 M4 (7382)	x3500 M4 (7383, E5-2600)	x3500 M4 (7383, E5-2600 v2)	x3530 M4 (7160)	x3550 M4 (7914, E5-2600)	x3550 M4 (7914, E5-2600 v2)	x3630 M4 (7158)	x3750 M4 (8722)	dx360 M4 (7912, E5-2600)	dx360 M4 (7912, E5-2600 v2)	nx360 M4 (5455)
SATA												
49Y5834	IBM 64GB SATA 1.8" MLC Enterprise Value SSD	N	N	N	N	N	N	N	Y	Y	Y	Y
00W1222	IBM 128GB SATA 1.8" MLC Enterprise Value SSD	N	N	N	N	N	N	N	Y	N	N	N
00W1227	IBM 256GB SATA 1.8" MLC Enterprise Value SSD	N	N	N	N	N	N	N	Y	N	N	Y
49Y5993	IBM 512GB SATA 1.8" MLC Enterprise Value SSD	N	N	N	N	N	N	N	Y	N	N	N
00W1120	IBM 100GB SATA 1.8" MLC Enterprise SSD	N	N	N	N	N	N	N	Y	N	N	Y
49Y6119	IBM 200GB SATA 1.8" MLC Enterprise SSD	N	N	N	N	N	N	N	Y	N	N	N
49Y6124	IBM 400GB SATA 1.8" MLC Enterprise SSD	N	N	N	N	N	N	N	Y	N	N	N
00AJ040	S3500 80GB SATA 1.8" MLC Enterprise Value SSD	N	N	N	N	N	N	N	Y	Y	Y	N
00AJ045	S3500 240GB SATA 1.8" MLC Enterprise Value SSD	N	N	N	N	N	N	N	Y	N	N	N
00AJ050	S3500 400GB SATA 1.8" MLC Enterprise Value SSD	N	N	N	N	N	N	N	Y	N	N	N
41Y8366	S3700 200GB SATA 1.8" MLC Enterprise SSD	N	N	N	N	N	N	N	Y	N	N	N
41Y8371	S3700 400GB SATA 1.8" MLC Enterprise SSD	N	N	N	N	N	N	N	Y	N	N	N

Supported 2.5-inch hot-swap solid-state drives and the servers with which they are supported are listed in the following table.

Table 9. Supported 2.5"-inch hot-swap solid-state drives

Part number	Product description	x3300 M4 (7382)	x3500 M4 (7383, E5-2600)	x3500 M4 (7383, E5-2600 v2)	x3530 M4 (7160)	x3550 M4 (7914, E5-2600)	x3550 M4 (7914, E5-2600 v2)	x3630 M4 (7158)	x3750 M4 (8722)	dx360 M4 (7912, E5-2600)	dx360 M4 (7912, E5-2600 v2)	nx360 M4 (5455)
SAS												
49Y6129	IBM 200GB SAS 2.5" MLC HS Enterprise SSD	Y	Y	Y	Y	Y	Y	N	Y	N	N	N
49Y6134	IBM 400GB SAS 2.5" MLC HS Enterprise SSD	Y	Y	Y	Y	Y	Y	N	Y	N	N	N
49Y6139	IBM 800GB SAS 2.5" MLC HS Enterprise SSD	Y	Y	Y	Y	Y	Y	N	Y	N	N	N
49Y6195	IBM 1.6TB SAS 2.5" MLC HS Enterprise SSD	Y	Y	Y	Y	Y	Y	N	Y	N	N	N
SATA												
00W1125	IBM 100GB SATA 2.5" MLC HS Enterprise SSD	Y	Y	Y	Y	Y	Y	N	Y	N	N	N
49Y5839	IBM 64GB SATA 2.5" MLC HS Enterprise Value SSD	Y	Y	Y	Y	Y	Y	N	Y	N	N	N
90Y8648	IBM 128GB SATA 2.5" MLC HS Enterprise Value SSD	Y	Y	Y	Y	Y	Y	N	Y	N	N	N
90Y8643	IBM 256GB SATA 2.5" MLC HS Enterprise Value SSD	Y	Y	Y	Y	Y	Y	N	Y	N	N	N
49Y5844	IBM 512GB SATA 2.5" MLC HS Enterprise Value SSD	Y	Y	Y	Y	Y	Y	N	Y	N	N	N
00AJ000	S3500 120GB SATA 2.5" MLC HS Enterprise Value SSD	Y	Y	Y	Y	Y	Y	N	Y	N	N	N
00AJ005	S3500 240GB SATA 2.5" MLC HS Enterprise Value SSD	Y	Y	Y	Y	Y	Y	N	Y	N	N	N
00AJ010	S3500 480GB SATA 2.5" MLC HS Enterprise Value SSD	Y	Y	Y	Y	Y	Y	N	Y	N	N	N
00AJ015	S3500 800GB SATA 2.5" MLC HS Enterprise Value SSD	Y	Y	Y	Y	Y	Y	N	Y	N	N	N
41Y8331	S3700 200GB SATA 2.5" MLC HS Enterprise SSD	Y	Y	Y	Y	Y	Y	N	Y	N	N	N
41Y8336	S3700 400GB SATA 2.5" MLC HS Enterprise SSD	Y	Y	Y	Y	Y	Y	N	Y	N	N	N
41Y8341	S3700 800GB SATA 2.5" MLC HS Enterprise SSD	Y	Y	Y	Y	Y	Y	N	Y	N	N	N

Supported 2.5-inch simple-swap solid-state drives and the servers with which they are supported are listed in the following table.

Table 10. Supported 2.5"-inch simple-swap solid-state drives

Part number	Product description	x3300 M4 (7382)	x3500 M4 (7383, E5-2600)	x3500 M4 (7383, E5-2600 v2)	x3530 M4 (7160)	x3550 M4 (7914, E5-2600)	x3550 M4 (7914, E5-2600 v2)	x3630 M4 (7158)	x3750 M4 (8722)	dx360 M4 (7912, E5-2600)	dx360 M4 (7912, E5-2600 v2)	nx360 M4 (5455)
SAS												
49Y6144	IBM 200GB SAS 2.5" MLC SS Enterprise SSD	N	N	N	Y	N	N	N	N	Y	Y	N
49Y6149	IBM 400GB SAS 2.5" MLC SS Enterprise SSD	N	N	N	Y	N	N	N	N	Y	Y	N
49Y6154	IBM 800GB SAS 2.5" MLC SS Enterprise SSD	N	N	N	Y	N	N	N	N	Y	Y	N
49Y6200	IBM 1.6TB SAS 2.5" MLC SS Enterprise SSD	N	N	N	Y	N	N	N	N	Y	Y	N
SATA												
00W1130	IBM 100GB SATA 2.5" MLC SS Enterprise SSD	N	N	N	Y	N	N	N	N	Y	Y	N
49Y5849	IBM 64GB SATA 2.5" MLC SS Enterprise Value SSD	N	N	N	Y	N	N	N	N	Y	Y	N
90Y8668	IBM 128GB SATA 2.5" MLC SS Enterprise Value SSD	N	N	N	Y	Y	Y	N	N	Y	Y	N
90Y8663	IBM 256GB SATA 2.5" MLC SS Enterprise Value SSD	N	N	N	Y	Y	Y	N	N	Y	Y	N
49Y5854	IBM 512GB SATA 2.5" MLC SS Enterprise Value SSD	N	N	N	Y	N	N	N	N	Y	Y	N
00AJ020	S3500 120GB SATA 2.5" MLC SS Enterprise Value SSD	N	N	N	Y	N	N	N	N	Y	Y	N
00AJ025	S3500 240GB SATA 2.5" MLC SS Enterprise Value SSD	N	N	N	Y	N	N	N	N	Y	Y	N
00AJ030	S3500 480GB SATA 2.5" MLC SS Enterprise Value SSD	N	N	N	Y	N	N	N	N	Y	Y	N
00AJ035	S3500 800GB SATA 2.5" MLC SS Enterprise Value SSD	N	N	N	Y	N	N	N	N	Y	Y	N
41Y8351	S3700 200GB SATA 2.5" MLC SS Enterprise SSD	N	N	N	Y	N	N	N	N	Y	Y	N
41Y8356	S3700 400GB SATA 2.5" MLC SS Enterprise SSD	N	N	N	Y	N	N	N	N	Y	Y	N
41Y8361	S3700 800GB SATA 2.5" MLC SS Enterprise SSD	N	N	N	Y	N	N	N	N	Y	Y	N

Supported 3.5-inch hot-swap solid-state drives and the servers with which they are supported are listed in the following table.

Table 11. Supported 3.5"-inch hot-swap solid-state drives

Part number	Product description	x3300 M4 (7382)	x3500 M4 (7383, E5-2600)	x3500 M4 (7383, E5-2600 v2)	x3530 M4 (7160)	x3550 M4 (7914, E5-2600)	x3550 M4 (7914, E5-2600 v2)	x3630 M4 (7158)	x3750 M4 (8722)	dx360 M4 (7912, E5-2600)	dx360 M4 (7912, E5-2600 v2)	nx360 M4 (5455)
SAS												
00W1306	IBM 200GB SAS 3.5" MLC HS Enterprise SSD	N	N	N	N	N	N	Y	N	N	N	N
00W1311	IBM 400GB SAS 3.5" MLC HS Enterprise SSD	N	N	N	N	N	N	Y	N	N	N	N
00W1316	IBM 800GB SAS 3.5" MLC HS Enterprise SSD	N	N	N	N	N	N	Y	N	N	N	N
SATA												
00W1286	IBM 64GB SATA 3.5" MLC HS Enterprise Value SSD	N	N	N	N	N	N	Y	N	N	N	N
00W1291	IBM 128GB SATA 3.5" MLC HS Enterprise Value SSD	N	N	N	N	N	N	Y	N	N	N	N
00W1296	IBM 256GB SATA 3.5" MLC HS Enterprise Value SSD	N	N	N	N	N	N	Y	N	N	N	N
00W1301	IBM 512GB SATA 3.5" MLC HS Enterprise Value SSD	N	N	N	N	N	N	Y	N	N	N	N

See IBM ServerProven® for the latest information about the System x servers that support each adapter: http://ibm.com/servers/eserver/serverproven/compat/us/

Supported operating systems

The ServeRAID M1115 SAS/SATA Controller supports the following operating systems:

- Microsoft Windows Server 2012
- Microsoft Windows Server 2008 R2
- Microsoft Windows Server 2008, Datacenter x64 Edition
- Microsoft Windows Server 2008, Datacenter x86 Edition
- Microsoft Windows Server 2008, Enterprise x64 Edition
- Microsoft Windows Server 2008, Enterprise x86 Edition
- Microsoft Windows Server 2008, Standard x64 Edition
- Microsoft Windows Server 2008, Standard x86 Edition
- Microsoft Windows Server 2008, Web x64 Edition
- Microsoft Windows Server 2008, Web x86 Edition
- Red Hat Enterprise Linux 6 Server x64 Edition
- Red Hat Enterprise Linux 6 Server Edition
- Red Hat Enterprise Linux 5 Server with Xen x64 Edition
- Red Hat Enterprise Linux 5 Server x64 Edition
- SUSE Linux Enterprise Server 11 for AMD64/EM64T
- SUSE Linux Enterprise Server 11 for x86
- SUSE Linux Enterprise Server 11 with Xen for AMD64/EM64T
- SUSE Linux Enterprise Server 10 for AMD64/EM64T
- VMware vSphere 5.1 (ESXi)
- VMware vSphere 5.0 (ESXi)
- VMware ESX 4.1
- VMware ESXi 4.1

See the IBM ServerProven® website for the latest information about the specific versions and service levels supported and any other prerequisites:
http://www.ibm.com/systems/info/x86servers/serverproven/compat/us/nos/matrix.shtml

Warranty

The ServeRAID M1115 SAS/SATA Controller carries a 1-year limited warranty. When installed in a supported System x server, the adapter assumes your system's base warranty and any IBM ServicePac® upgrade.

Physical specifications

The ServeRAID M1115 SAS/SATA Controller has the following physical specifications:

Dimensions (approximate):

- Height: 15 mm (0.6 in.)
- Width: 69 mm (2.7 in.)
- Depth: 168 mm (6.6 in.)
- Weight: 77 g (0.2 lb.)

Shipping dimensions (approximate):

- Height: 51 mm (2.0 in.)
- Width: 143.0 mm (5.6 in.)
- Depth: 238 mm (9.4 in.)
- Weight: 222 g (0.5 lb.)

Operating environment

The ServeRAID M1115 SAS/SATA Controller is supported in the following environment:

- Temperature:
  - 10 to 35 degrees C (50 to 95 F) at 0 to 914 m (0 to 3,000 ft)
  - 10 to 32 degrees C (50 to 90 F) at 914 to 2,133 m (3,000 to 7,000 ft)
- Relative humidity: 20% to 80% (noncondensing)
- Maximum altitude: 2,133 m (7,000 ft)

Agency approvals

The adapter conforms to the following regulations:

- EN55022
- EN55024
- EN60950 / CE
- EN 61000-3-2
- EN 61000-3-3
- IEC 950 CB Scheme
- FCC Part 15 Class A, and Class B
- UL 1950
- CSA C22.2 950-95
- VCCI
- NZ AS3548 / C-tick
- RRL for MIC (KCC)
- BSMI
- UL 94-/V

Related publications and links

For more information, see the following documents:

- IBM US Announcement Letter:
  http://ibm.com/common/ssi/cgi-bin/ssialias?infotype=dd&subtype=ca&&htmlfid=897/ENUS112-048
- System x RAID products home page:
  http://www.ibm.com/systems/storage/product/systemx/scsi_raid.html
- IBM ServeRAID software matrix:
  http://www.ibm.com/support/docview.wss?uid=psg1SERV-RAID
- IBM System x Configuration and Options Guide:
  http://www.ibm.com/support/docview.wss?uid=psg1SCOD-3ZVQ5W

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